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(72) Inventor(s): Laurence Thomas Marshall		(58) Field of Search:	UK CL (Edition V) A4S INT CL ⁷ A47H Other: Online databases: EPODOC; WPI; JAPIO
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(54) Abstract Title: Curtain suspension system

- (57) A curtain 44 comprises pleated material with a plurality of curtain gliders 21 attached thereto, the gliders being positioned on the curtain such that prior to location on a curtain rail all the gliders can be aligned, thereby facilitating assembly. Each glider may comprise a curtain attachment portion, configured as first and second members for location on opposite sides of the curtain material. The rail may include a stopper, movable between retracted and extended positions.

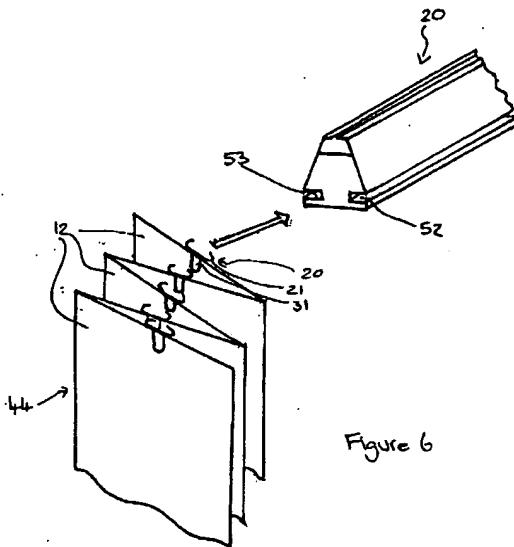


Figure 6

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The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

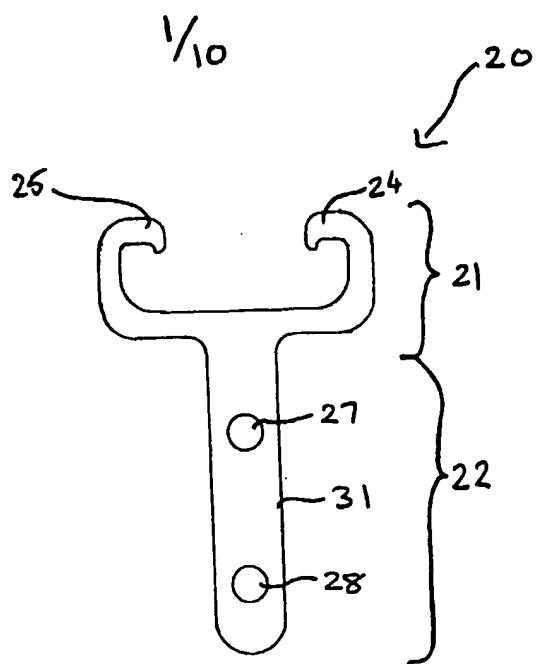


Figure 1A

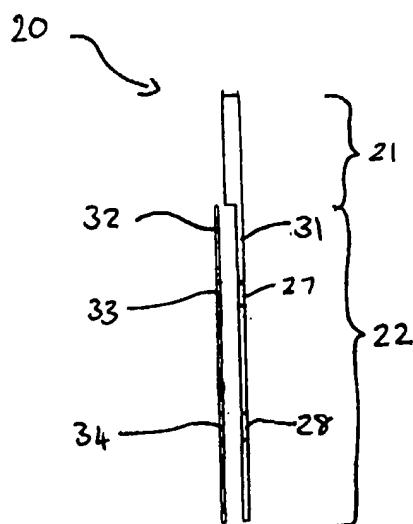


Figure 1B

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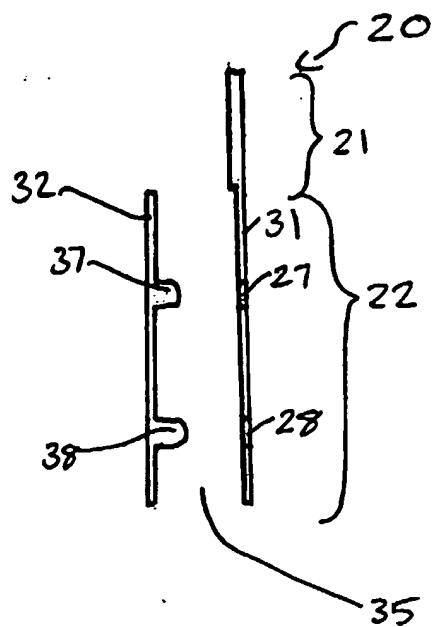


Figure 2A

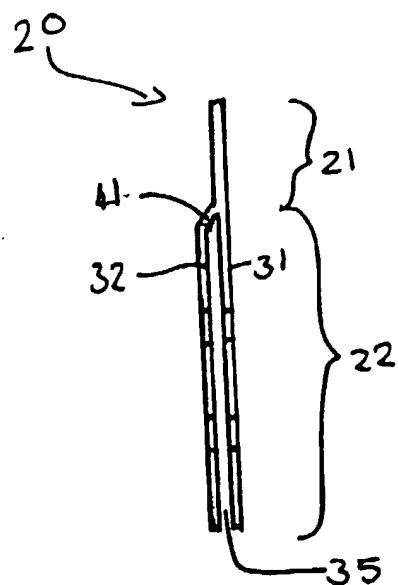


Figure 2B

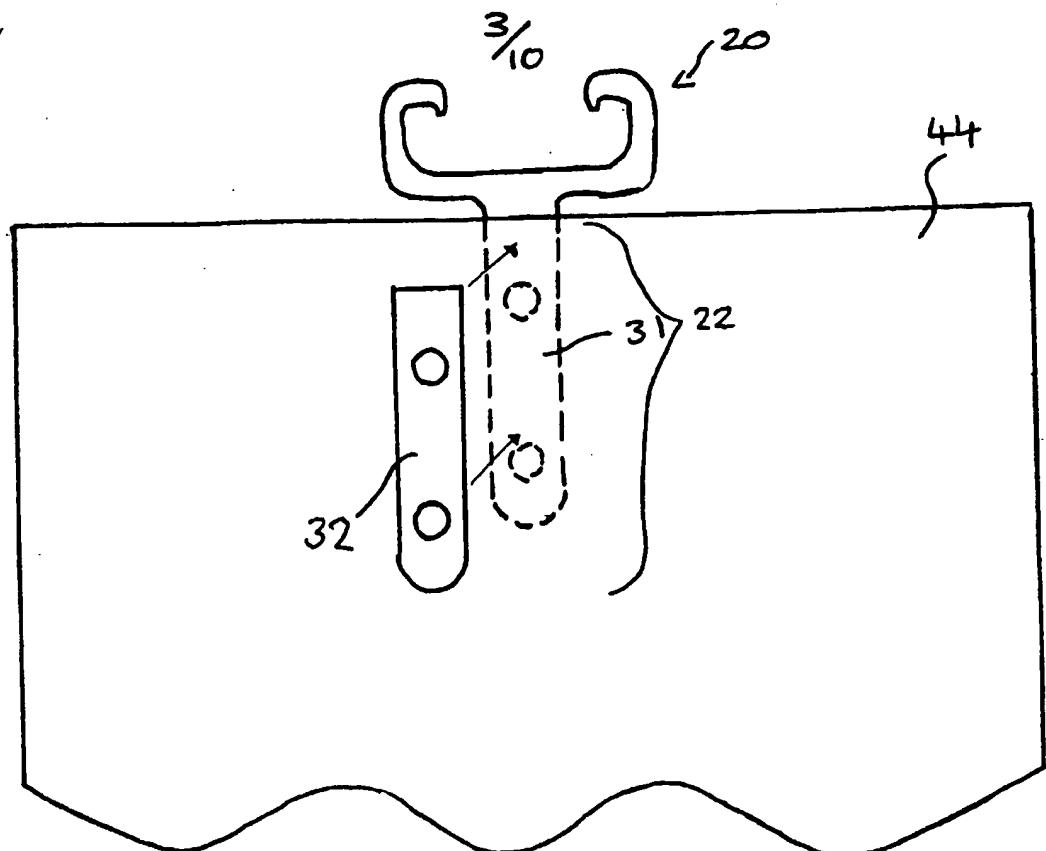


Figure 3A

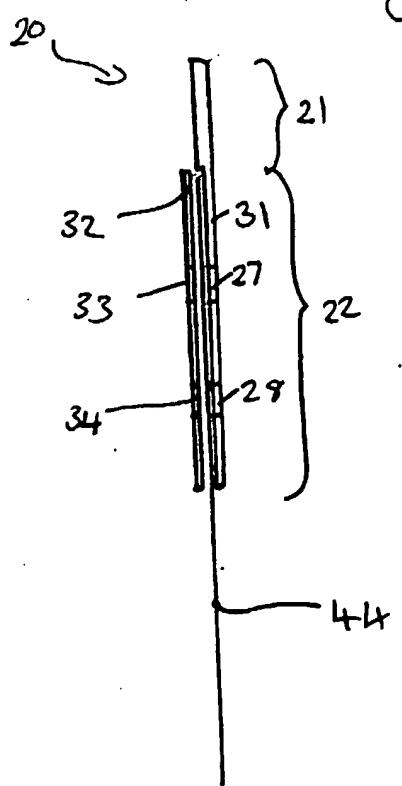


Figure 3B

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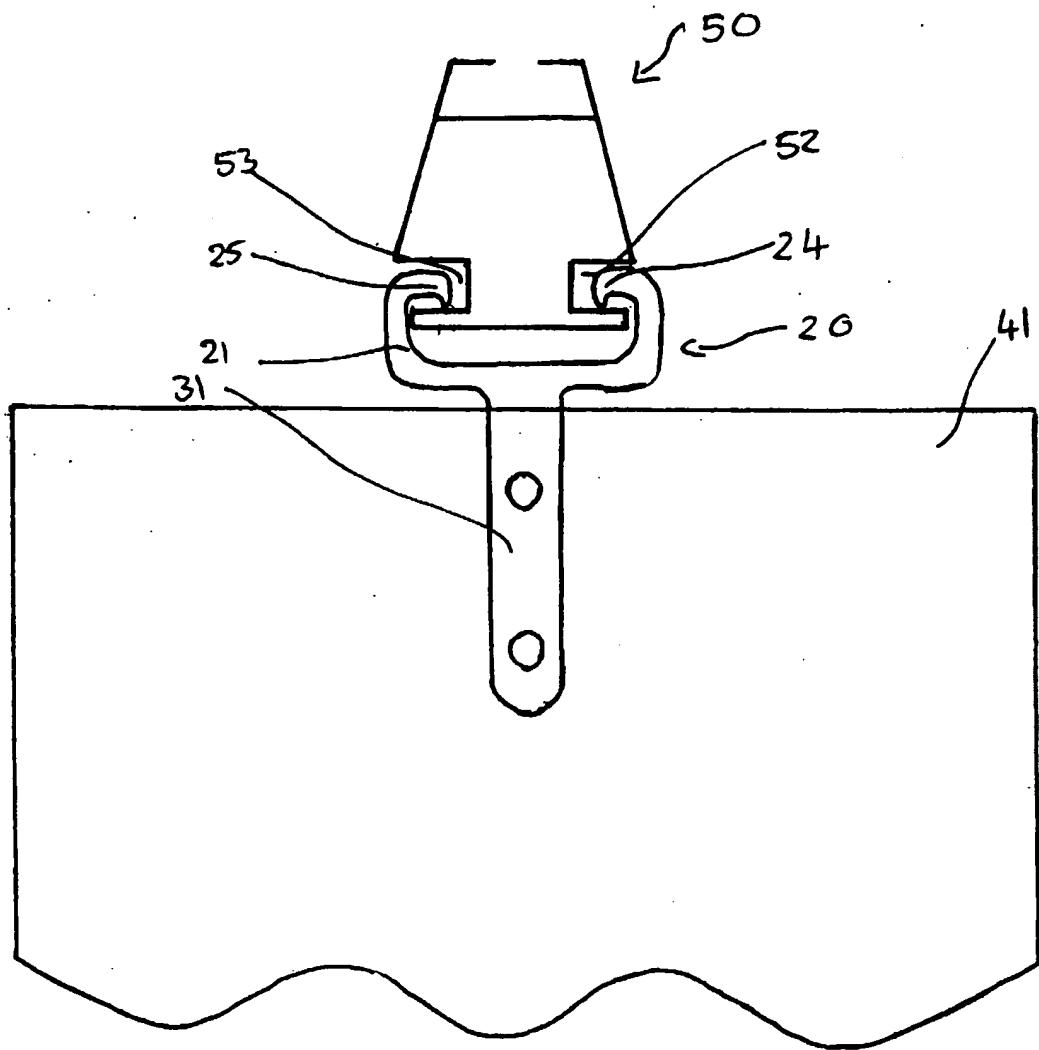


Figure 4

$\frac{5}{10}$

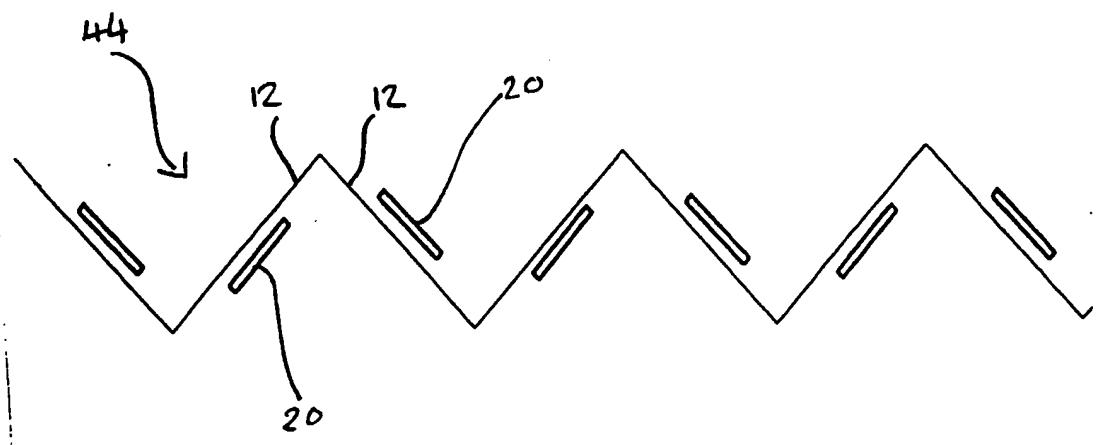


Figure 5

$\frac{6}{10}$

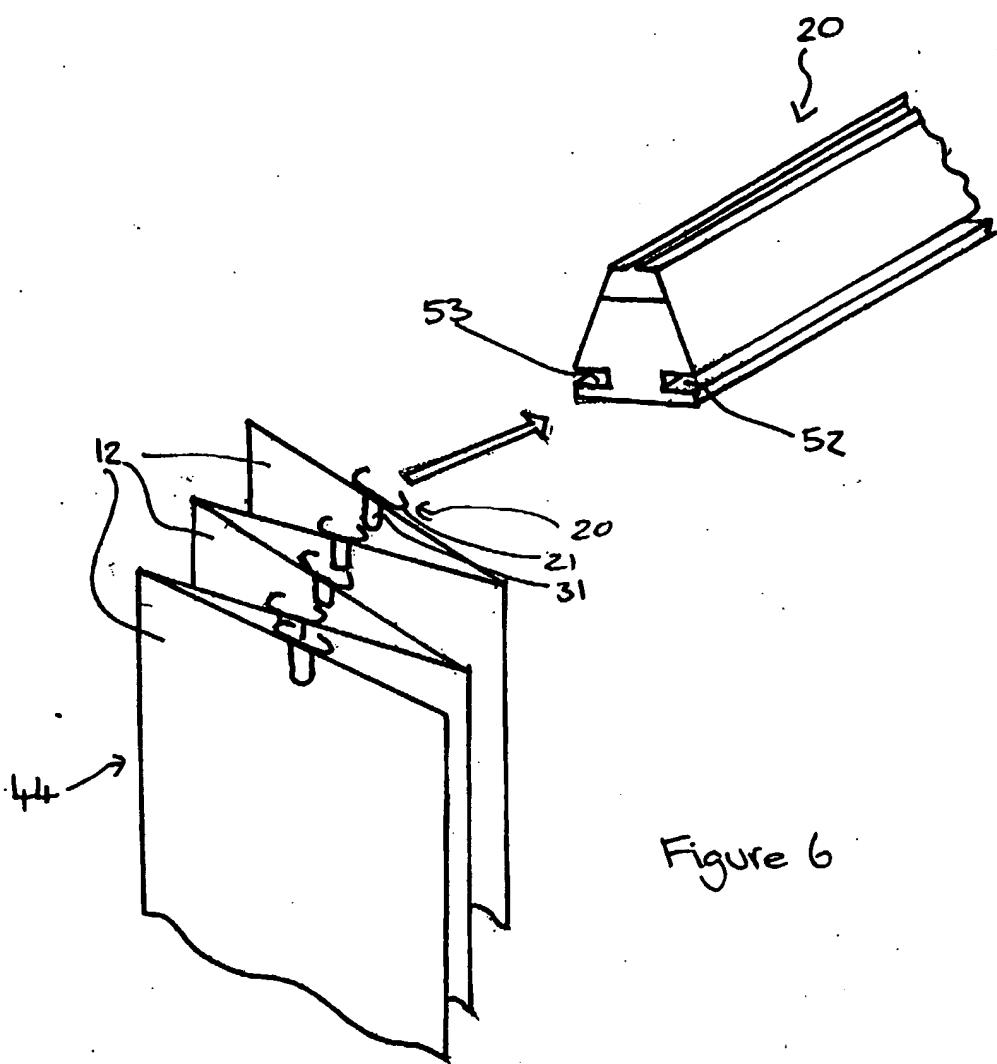


Figure 6

$\frac{7}{10}$

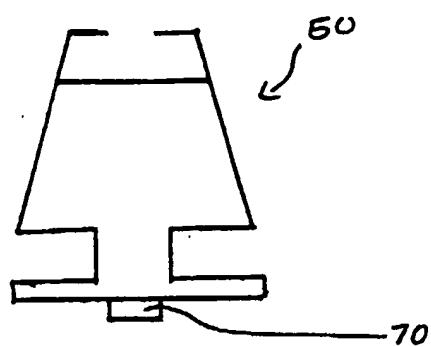


Figure 7A

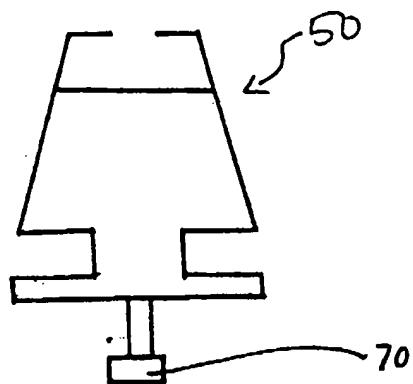


Figure 7B

$\frac{8}{10}$

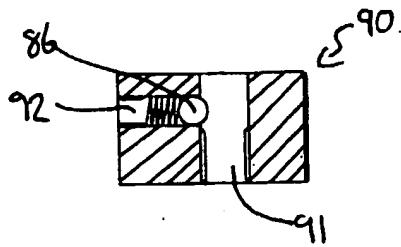
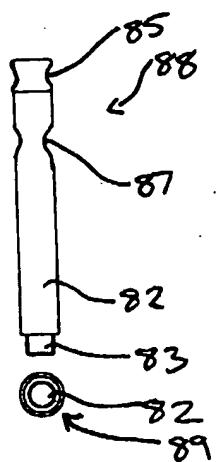


Figure 8B

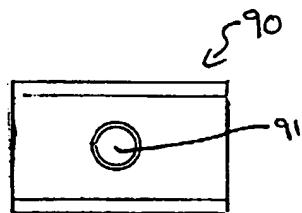
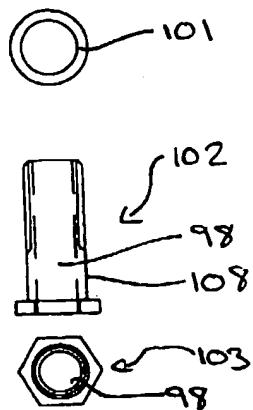


Figure 8C

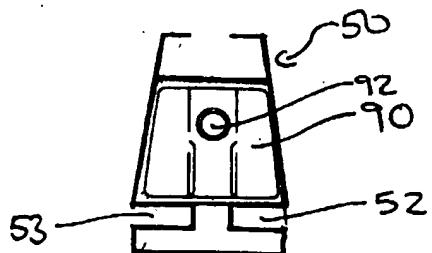
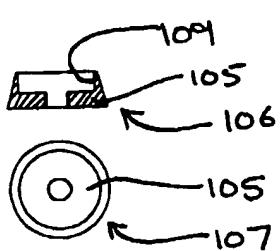


Figure 8A

Figure 8D

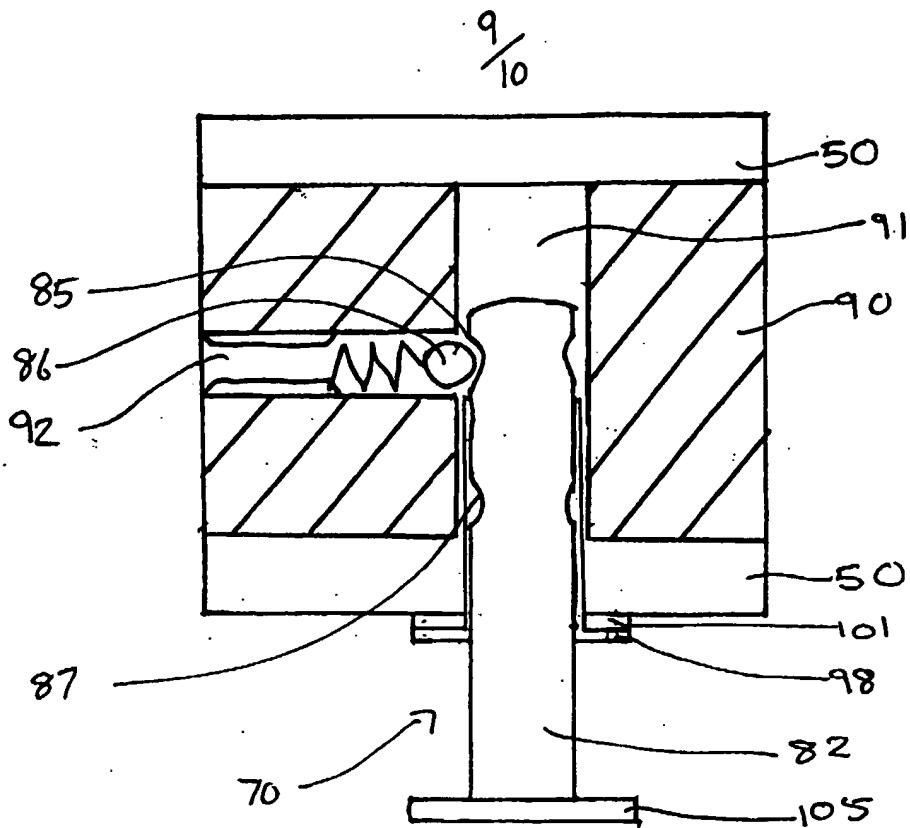


Figure 9A

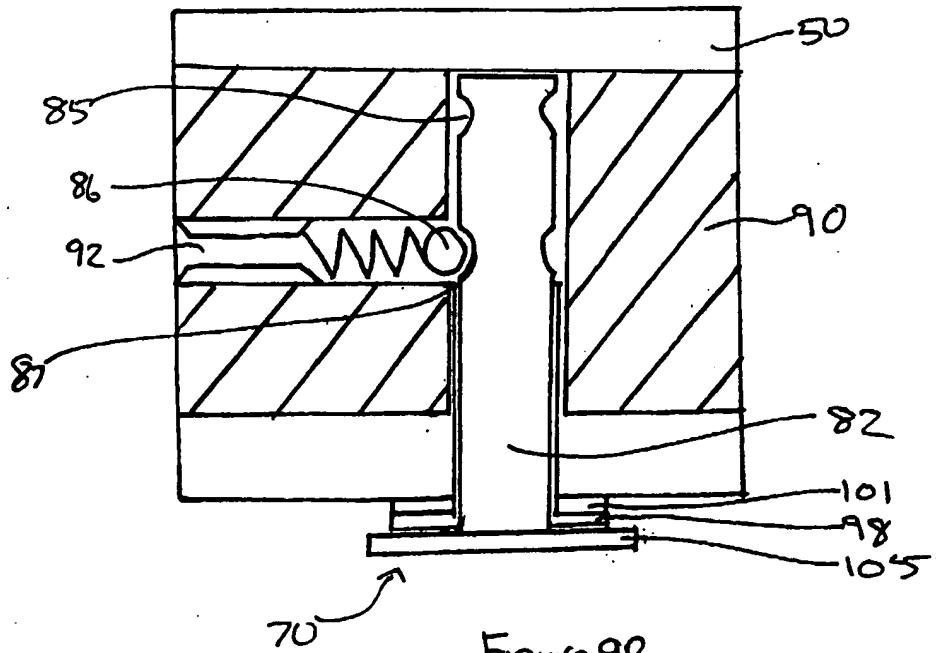


Figure 9B

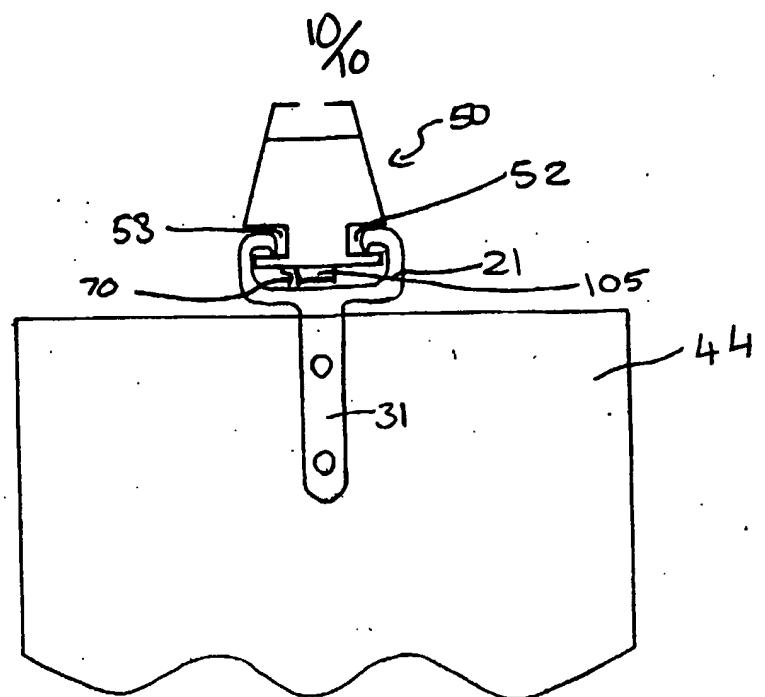


Figure 10A

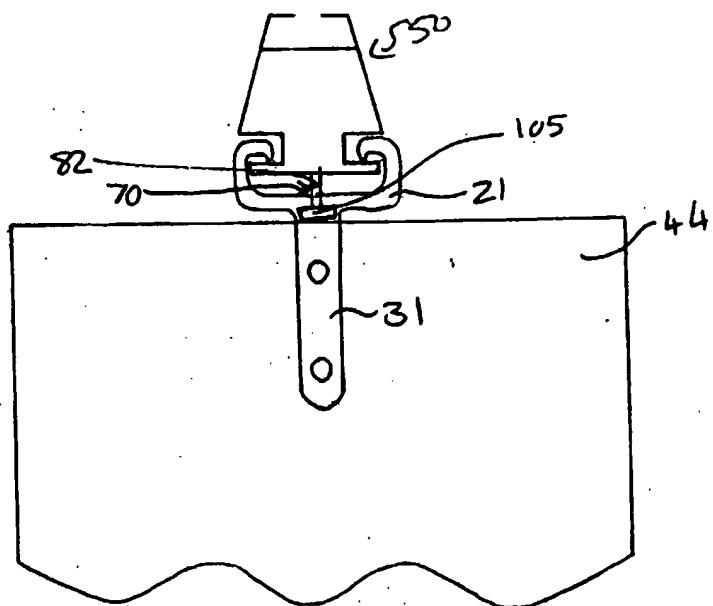


Figure 10B

CURTAIN SYSTEM

This invention relates to an improved curtain system, in particular to a
5 system which allows rapid curtain removal and replacement.

Typically, using conventional curtain systems, significant time and effort
is required to remove and replace curtains. It is an aim of this invention
to provide a simple and rapid system for the removal and replacement of
10 curtains, with particular application to hospitals and medical
environments.

It is desirable in a hospital or medical environment to maintain clean and
sterile surroundings, this includes the curtains which can become
15 contaminated, in particular those curtains which form cubicles around
beds or examination areas. Currently the replacement of such curtains is
labour intensive and costly.

According to a first aspect of the present invention a curtain comprises
20 pleated material with a plurality of curtain gliders attached thereto, the
curtain gliders being positioned on the pleated curtain such that prior to
location on a curtain rail all the curtain gliders are aligned.

The curtain material may be disposable, or alternatively it may be
25 washable. The material may be woven fabric, paper, plastic or any other
suitable material.

The curtain is preferably pleated or folded into panels of equal size.

30 The curtain glider may comprise a rail attachment portion, adapted in use
to engage with and move along a curtain rail, and a curtain attachment

portion adapted in use to attach the curtain glider to the curtain.

The curtain attachment portion may be configured as a first member, located on one side of the curtain material, and a second member, located
5 on the other side of the curtain material. Preferably the first and second members are joined by a connecting element which penetrates the curtain material, thereby attaching the curtain glider to the curtain.

Preferably the first and second members of the curtain attachment portion
10 are configured as thin plates. The members may be 1mm thick and 10mm wide.

Preferably the curtain gliders are attached to the curtain prior to engagement of the rail attachment portion of the curtain glider with the
15 curtain rail.

Attachment of the curtain glider to the curtain may be permanent. Alternatively it may be possible to release the curtain from the curtain glider.

20 Preferably at least one curtain glider is attached to each pleat of the pleated curtain. Curtain gliders may be located on alternate sides of the material, such location may result in a more compact folded configuration than if all the curtain gliders were on the same side of the curtain.

25 Preferably all gliders are located in the same relative position on their respective pleat, this may be in the centre of the pleat.

30 The curtain attachment portion of the curtain glider is preferably substantially narrower than the pleats, to allow the curtains to be drawn.

A second aspect of the invention provides a curtain rail which includes a stopper, the stopper being movable between a retracted position, in which the stopper is arranged to allow curtain gliders on the curtain rail to move 5 past the stopper, and an extended position, in which the stopper is arranged to prevent curtain gliders on the curtain rail moving past the stopper.

Preferably the stopper can be moved between the extended and retracted 10 position without the need for additional tools, typically a person can move the stopper by grasping the exposed end thereof between their finger and thumb.

A curtain rail may incorporate one or more stoppers.
15

At least one stopper may be located at the end of a curtain rail. In its extended position the stopper prevents curtain gliders from coming off the end of the curtain rail when the curtain is mounted on the rail and in use. In its retracted position curtain gliders can move past the stopper allowing 20 curtains to removed from the curtain rail or to be hung from the curtain rail.

A third aspect of the invention provides a curtain system comprising: a curtain track; a stopper on the curtain track, the stopper being movable 25 between a retracted position, in which the stopper is arranged to allow curtain gliders on the curtain rail to move past the stopper, and an extended position, in which the stopper is arranged to prevent curtain gliders on the curtain rail moving past the stopper; a pleated curtain; and a plurality of curtain gliders attached to the pleated curtain in an 30 arrangement that allows the curtain gliders to be aligned prior to location of the curtain on the curtain rail.

Preferred embodiments of the present invention will now be described, merely by way of example, with reference to the accompanying drawings in which:

5

Figures 1A and 1B are a front and end elevation of a curtain glider respectively;

10

Figures 2A and 2B are end elevations of alternative curtain gliders to that depicted in Figures 1A and 1B;

Figures 3A and 3B depict the curtain glider of Figures 1A and 1B located on a curtain;

15

Figure 4 depicts schematically the curtain of Figures 3A and 3B suspended from a curtain rail by a curtain glider;

Figure 5 is a schematic plan view of a pleated curtain with curtain gliders attached thereto;

20

Figure 6 depicts schematically the curtain of Figures 3A to 5 pleated with curtain gliders attached ready for hanging on a curtain rail;

25

Figures 7A and 7B are end elevations of a curtain rail for use with the curtain of figures 3A to 6 with a stopper fitted thereto.

30

Figures 8A to 8D depict components of the curtain rail stopper of Figures 7A and 7B, more specifically Figure 8A is an exploded view of the stopper, Figure 8B is the stopper block in cross section, Figure 8C is a plan view of the underside of the stopper

block, and Figure 8D is an elevation of the stopper block in a curtain rail;

5 **Figures 9A and 9B** are cross-sectional views of a curtain rail with a stopper of Figures 7A to 8D in the extended and retracted position respectively;

10 **Figures 10A and 10B** are end elevations of a curtain rail and curtain glider in which the stopper is in the retracted and extended position respectively.

Referring to Figures 1A to 2B a curtain glider 20 is configured as two portions, a rail attachment portion or hook 21 and a curtain attachment portion or grip 22. The hook 21 is adapted to attach the curtain glider 20 to a curtain rail 20 (Figure 4) and the grip 22 is adapted to attach the curtain glider 20 to a curtain 44 (Figures 3A and 3B).

The hook 21 is configured as a 'C' shaped channel with projections 24 and 25 configured to locate around a curtain rail 50 (Figure 4), engaging 20 the curtain glider 20 with the curtain rail 50 whilst allowing movement of the curtain glider 20 along the curtain rail 50.

Referring to Figures 1B to 3B, the grip 22 comprises two grip members 31 and 32. The first grip member 31 depends from hook 21, and is 25 located in use on one side of the curtain 44. The second grip member 32 is located in use on the other side of the curtain 44. The first 31 and second 32 grip members are attached to one another through the curtain 44, thereby attaching the curtain glider 20 to the curtain 44.

30 In use, holes 27, 28 in the first grip member 31 are aligned with holes 33, 34 in the second grip member 32, and a connecting element is located in

the holes to attach the curtain glider 20 to a curtain 44 located in the gap 35 between the first and second grip members 31, 32.

The connecting element may be configured as a rivet.

5

Referring to Figure 2A, in a second embodiment, the holes in grip member 32 have been replaced with connecting elements 37, 38. When the grip members 31, 32 are correctly aligned the connecting elements 37, 38 are locatable in holes 27, 28 in grip member 31. When a curtain is 10 located in the gap 35 between the grip members 31, 32, the grip members 31, 32 can be pushed together such that the connecting elements 37, 38 penetrate the curtain and holes 27, 28, and attach the curtain glider 20 to the curtain.

15 Referring to Figure 2B, in a third embodiment, grip members 31 and 32 are connected 41 at their upper end, that is the end closest to the hook 21. In this configuration the curtain glider 20 can be placed over the top of a curtain as a unitary piece, the curtain being accommodated in the gap 35 between the grip members 31 and 32.

20

Referring to Figure 4, once the curtain glider 20 is attached to the curtain 44, the curtain 44 can be suspended from the curtain rail 50. Projections 24 and 25 of hook 21 on the curtain glider 20 are located in channels 52 and 53 respectively of the curtain rail 50. The curtain glider 20 can move 25 along the channels 52, 53 in the curtain rail 50 to allow the attached curtain 44 to be opened and closed.

Referring to Figure 5, a plurality of curtain gliders 20 is attached to each curtain 44 before it is hung. More specifically, one curtain glider 20 is 30 attached to each panel 12 of a pleated curtain 44, each curtain glider 20 is located alternately on opposite sides of the curtain 44. Each curtain glider

20 is located in the same relative position on a curtain panel 12, more specifically, at the top and in the centre of the panel 12.

Referring to Figure 6 when the curtain gliders 20 have been attached to
5 alternate sides of the curtain 44 as shown in Figure 5, the curtain 44 is folded such that the curtain gliders 20 are all aligned, and the hooks 21 are stacked. (Figure 6 shows the curtain 60 slightly pulled apart for clarity, however in use the curtain would be fully folded.) To hang the curtain 44 the aligned curtain gliders 20 are fed into channels 52 and 53
10 on the curtain rail 50 while the curtain 44 is still in the folded condition, all the curtain gliders 20 are located on the curtain rail 50 in one single action.

The grip members 31, 32 (Figure 4) are much narrower than the pleats or
15 panels 12 to allow the curtain 44 to be drawn and the pleats 12 to open, while the curtain gliders 20 remain perpendicular to the curtain rail 50.

Referring to Figures 7A and 7B the curtain rail 50 has a stopper 70 fitted thereto, which is moveable between a retracted position (Figure 7A), in
20 which curtain gliders 20 can move past the stopper 70, and an extended position (Figure 7B), in which curtain gliders 20 cannot move past the stopper 70.

Referring to Figure 8A, a stopper 70 comprises: a pin 82 with two
25 grooves 85 and 87 spaced apart towards its upper end and threads 83 at its lower end (the pin is shown in cross section 88 and in plan 89); a support sleeve 98 (shown in cross section 102 and in plan 103) which is threaded on its outer surface 108 and has a hexagonal head; and a knob 105, which is threaded on its inside surface 109 and has a circular head
30 (shown in cross section 106 and in plan 107).

- Referring to Figures 8A to 9B, pin 82 is a sliding fit into the support sleeve 98, and the knob 105 is screwed onto the threaded end of the pin 82 by mating threads 83 and 109. Washer 101 is placed over the support sleeve 98 and the support sleeve 98 is located through a hole in the bottom of the curtain rail 50 and screwed into bore 91 in a stopper block 90. The stopper block 90 is located in the curtain rail 50. The washer 101 protects the curtain rail 50 against damage by any burrs on the support sleeve 98.
- 5 10 Once the support sleeve 98 is located in the stopper block 90 and the pin 82 is located in bore 91, grooves 85 and 87 on pin 82 can interact with a spring-biased ball 86 in bore 92 in the stopper block 90.
- 15 Referring to Figure 9A, the engagement of the spring-biased ball 86 in groove 85 on pin 82 locks the stopper 70 in an extended position.
- Referring to Figure 9B, the engagement of the spring-biased ball 86 in groove 87 on pin 82 locks the stopper 70 in a retracted position.
- 20 In use, pushing and pulling of the knob 105 moves the pin 82 such that the spring-biased ball 86 interacts either with groove 85 or groove 87 and the stopper 70 moves between the retracted and extended position.
- 25 Referring to Figures 10A and 10B, when the stopper 70 is in the retracted position, such that the knob 105 is flush with the curtain rail 50, a curtain glider 20 can move past the stopper. However, when the stopper 70 is in the extended position movement of the curtain glider 20 past the stopper is prevented.
- 30 Stoppers 70 may be provided at either end of a run of curtain track 50.

To hang, or take down, a curtain 44 the stopper 70 is moved to the retracted position (Figure 10A) which allows the curtain gliders 20 to move past the stopper 70. Once the curtain 44 is suspended from the curtain rail 50 the stopper 70 may be moved to the extended position
5 (Figure 10B) to prevent the curtain 44 and associated curtain gliders 20 being pulled off the end of the curtain rail 50 when the curtains 44 are opened and closed.

Two closely spaced stoppers 70 may be located at an end of a curtain rail
10 50 and used to trap the first curtain glider 20 on a curtain 44 therebetween, thus securing the end of the curtain 44 at a fixed location on the curtain rail 50.

CLAIMS

1. A curtain comprising pleated material with a plurality of curtain gliders attached thereto, the curtain gliders being positioned on the
5 pleated curtain such that prior to location on a curtain rail all the curtain gliders can be aligned.

2. A curtain according to Claim 1 wherein the curtain is made of a disposable material.

10

3. A curtain according to Claim 1, wherein the curtain is made of a washable material.

15

4. A curtain according to any preceding claim wherein the curtain is pleated into panels of equal size.

20

5. A curtain according to any preceding claim wherein the curtain glider comprises a rail attachment portion, adapted in use to engage with and move along a curtain rail, and a curtain attachment portion adapted in use to attach the curtain glider to the curtain.

25

6. A curtain according to Claim 5 wherein the curtain attachment portion is configured as a first member, located on one side of the curtain material, and a second member, located on the other side of the curtain material.

30

7. A curtain as claimed in Claim 6 wherein the first and second member of the curtain attachment portion are joined by a connecting element which penetrates the curtain material, thereby attaching the curtain glider to the curtain.

8. A curtain as claimed in Claim 6 or Claim 7 wherein the first and second members are configured as thin plates.
9. A curtain as claimed in any preceding claim wherein the curtain gliders are permanently attached to the curtain.
5
10. A curtain as claimed in any of claims 1 to 8 wherein the curtain glider is releasably attached to the curtain.
- 10 11. A curtain as claimed in any preceding claim wherein at least one curtain glider is attached to each pleat of the pleated curtain.
12. A curtain as claimed in any preceding claim wherein the curtain gliders are located on alternate side of the curtain material.
15
13. A curtain as claimed in any preceding claim wherein the curtain gliders are each located in the same relative position on their respective pleat.
- 20 14. A curtain as claimed in Claim 13 wherein each curtain glider is located at the centre of a pleat.
15. A curtain as claimed in Claim 5 or any claim dependent thereon wherein the curtain attachment portions are substantially narrower than
25 the pleats to allow the curtain to be drawn.
16. A curtain rail which includes a stopper, the stopper being movable between a retracted position, in which the stopper is arranged to allow curtain gliders on the curtain rail to move past the stopper, and an
30 extended position, in which the stopper is arranged to prevent curtain

gliders on the curtain rail moving past the stopper.

17. A curtain rail as claimed in Claim 16 wherein the stopper is located at an end of the curtain rail.

5

18. A curtain system comprising a curtain rail; a stopper on the curtain rail, the stopper being movable between a retracted position, in which the stopper is arranged to allow curtain gliders on the curtain rail to move past the stopper, and an extended position, in which the stopper is 10 arranged to prevent curtain gliders on the curtain rail moving past the stopper; a pleated curtain; and a plurality of curtain gliders attached to the pleated curtain in an arrangement that allows the curtain gliders to be aligned prior to location of the curtain on the curtain rail.

15 19. A curtain substantially as hereinbefore described with reference to the accompanying drawings.

20. A curtain rail substantially as hereinbefore described with reference to the accompanying drawings.

20

21. A curtain system substantially as hereinbefore described with reference to the accompanying drawings.



13



INVESTOR IN PEOPLE

Application No: GB 0214339.4
Claims searched: 1-15,18,19,21

Examiner: Brian B Caswell
Date of search: 13 February 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1-5,9, 11,13-15	GB 2214803 A	(PLEATED CURTAIN) see especially Figure 1
X	1-9,11, 13,14	GB 2196842 A	(SENG CHENG SHIH)
X	1-9,13-15	GB 2157164 A	(RATEGOLD)
X	1-6,9, 11,13,14	GB1530589	(BESTOBELL)
X	1-5,9, 11,13-15	EP 0111927 A1	(EVERLON)
X	1-5,9, 13-15	US 5323834	(TOTI) see especially Figure 6

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^V:

A4S

Worldwide search of patent documents classified in the following areas of the IPC⁷:

A47H

The following online and other databases have been used in the preparation of this search report:

WPI; EPODOC; JAPIO